CLAIMS:

1. A method for preservation of biological material, comprising:

(a) adding a preservation solution to said biological material, said preservation solution comprising one or more polyphenols;

(b) cooling the biological material; and

(c) storing the biological material at appropriate storing conditions.

2. The method of Claim 1, wherein the polyphenols include one or more catechins.

3. The method of Claim 2, wherein the catechin is epigallocatechin gallate (EGCG).

4. The method of any one of Claims 1-3, wherein the polyphenols are derived from green tea extract (GTE).

5. The method of any one of Claims 1-4, wherein the preservation solution does not comprise a significant amount of polyalcohols.

6. The method of Claim 5, wherein the polyalcohol is glycerol.

7. The method of any one of Claims 1-6, wherein the preservation solution does not comprise a significant amount of DMSO.

8. The method of any one of Claims 1-7, wherein the preservation solution comprises a macromolecule.

9. The method of Claim 8, wherein the macromolecule is dextran.

10. The method of any one of Claims 1-7, wherein the preservation solution comprises trehalose.

11. The method of any one of Claims 1-10, wherein the preservation is cryopreservation, the preservation solution is a cryopreservation solution and the cooling of step (c) is to a temperature below 0°C.

12. The method of Claim 11, wherein the cryopreservation is freezing and the cryopreservation solution is a freezing solution and the cryopreservation of step (c) is by freezing.

13. The method of Claim 11, wherein the cryopreservation is lyophilization, the cryopreservation solution is a lyophilization solution the cryopreservation of step **(c)** is by lyophilization.

14. The method of any one of Claims 1-13, wherein the biological material comprises cells selected from red blood cells (RBC), white blood cells (WBC), mononuclear cells (MNC), umbilical cord blood cells (UCB), hematopoietic stem cells (HSC) and bacteria.

15. The method of Claim 12, wherein the biological material comprises RBC and after thawing in appropriate thawing conditions the free hemoglobin levels of the biological material are below 10 percent.

16. The method of Claim 15, comprising:

(d) thawing said biological material in appropriate thawing conditions such that after thawing the biological material comprises RBC suspended in a liquid; and

(e) separating said RBC from said liquid.

17. The method of Claim 16, which does not comprise a step of washing the biological material.

18. The method of any one of Claims 16-17, wherein step **(e)** comprises:

(e') centrifuging the biological material such that the majority of RBC are in a pellet and the majority of the liquid is in a supernatant; and

(e") removing the supernatant.

19. The method of any one of Claims 15-18, wherein said free hemoglobin levels are below 2 percent.

20. The method of Claim 19, wherein or said free hemoglobin levels are below 1 percent.

21. Biological material preserved by the method of any one of the preceding claims.

22. Preserved biological material comprising viable biological material and one or more polyphenols.

23. The biological material of Claim 22, wherein the polyphenols include one or more catechins.

24. The biological material of Claim 23, wherein the catechin is epigallocatechin gallate (EGCG).

25. The biological material of any one of Claims 23 and 24, wherein the polyphenols are derived from GTE.

26. The biological material of any one of Claims 22-25, wherein the biological material does not comprise a significant amount of glycerol.

27. The biological material of any one of Claims 22-26, wherein the biological material does not comprise a significant amount of DMSO.

28. The biological material of any one of Claims 22-27, comprising cells selected from RBC, WBC, , MNC, UCB, HSC and bacteria.

29. The biological material of any one of Claims 22-28, having less than 10% H_2O as compared with its H2O content before preservation.

30. The biological material of any one of Claims 22-29, having essentially no glycerol.

31. The biological material of any one of Claims 22-30, having essentially no DMSO.

32. Frozen viable biological material comprising RBC and characterized in that after thawing in appropriate thawing conditions the free hemoglobin levels of the biological material are below 2 percent.

33. The frozen biological material of Claim 32, having essentially no glycerol.

34. The frozen biological material of any one of Claims 32-33, having essentially no DMSO.

35. A preservation solution for preserving biological material comprising one or more polyphenols.

36. The preservation solution of Claim 35, wherein the polyphenols include one or more catechins.

37. The preservation solution of Claim 36, wherein the catechin is epigallocatechin gallate (EGCG).

38. The biological material of any one of Claims 35-37, wherein the polyphenols are derived from GTE.

39. The biological material of any one of Claims 35-38, wherein the preservation solution does not comprise a significant amount of glycerol.

40. The biological material of any one of Claims 35-49, wherein the preservation solution does not comprise a significant amount of DMSO.

41. The preservation solution of any one of Claims 35-40, being a cryopreservation solution.

42. The cryopreservation solution of Claim 41, being a freezing solution.

43. The cryopreservation solution of Claim 41, being a lyophilization solution.

44. A method for the preservation of biological material comprising RBC comprising:

(a) freezing the biological material in appropriate freezing conditions; and

(b) storing the biological material at appropriate storing conditions;

said method characterized in that after thawing in appropriate thawing conditions the free hemoglobin levels of the biological material are below 2 percent.

45. The method of claim 44, wherein the appropriate freezing conditions include addition of a freezing solution.

46. The method of claim 45, wherein said freezing solution comprises one or more polyphenols.

47. The method of any one of Claims 44-46, the method comprising:

(c) thawing said biological material in appropriate thawing conditions such that after thawing the biological material comprises RBC suspended in a liquid; and

(d) separating said RBC from said liquid.

48. The method of Claim 47, wherein the method does not comprise a step of washing the biological material.

49. The method of any one of Claims 47-48, wherein step **(d)** comprises:

(d') centrifuging the biological material such that the majority of RBC are in a pellet and the majority of the liquid is in a supernatant; and

(d") removing the supernatant.

50. The method of any one of Claims 47-49, wherein said free hemoglobin levels are below 2 percent.

51. The method of Claim 50, wherein or said free hemoglobin levels are below 1 percent.

52. A method for preservation of biological material, comprising:

(a) adding a preservation solution essentially free of any polyalcohol, to said biological material;

(b) cooling the biological material; and

(c) storing the biological material at appropriate storing conditions.

53. A preserved viable biological material, having a volume exceeding 1 ml, preserved for a period exceeding 40 days.